

# OPT Short Range (CMOS) Series Photoelectric Sensors



**OPT2001**

## 50 x 50mm rectangular plastic - DC

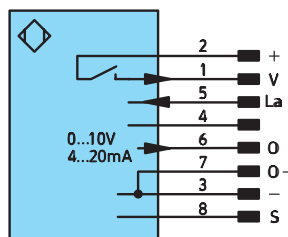
- Diffuse (Reflex) laser distance measurement sensors with CMOS technology
- Analog and switching outputs available
- Measured value independent of material, color, and brightness
- Class 1 and 2 lasers available (safety label included with Class 2 lasers)
- High resolution down to 8µm - (analog scalable down to 5mm range)
- High speed response times down to 660µs
- M12 quick-disconnect; purchase cable separately
- Mounting hardware included



OPT Series Photoelectric Sensors Selection Chart											
Part Number	Price	Sensing Range	Laser Class	Measurement Rate	Resolution	Output State	Logic	Connection	Wiring	Drawing Link	Characteristic Curves
<b>Diffuse (Reflex)</b>											
<b>OPT2001</b>	\$778.00	30-80mm	2	1500/s [660 µs]	< 8µm	Analog 4-20mA or 0-10V	—	8-pin M12 quick- disconnect	Diagram 1	<a href="#">PDF</a>	See Characteristic Curve
<b>OPT2002</b>	\$778.00	[1.18-3.15 in]	1	1000/s [1000 µs]							
<b>OPT2003</b>	\$778.00	40-160mm	2	1500/s [660 µs]	< 20µm	—	8-pin M12 quick- disconnect	Diagram 1	<a href="#">PDF</a>		
<b>OPT2004</b>	\$778.00	[1.57-6.30 in]	1	1000/s [1000 µs]							
<b>OPT2005</b>	\$778.00	50-350mm	2	800/s [1250 µs]	< 50µm	—	8-pin M12 quick- disconnect	Diagram 1	<a href="#">PDF</a>		
<b>OPT2006</b>	\$778.00	[1.97-13.80 in]	1	500/s [2000 µs]							
<b>OPT2007</b>	\$390.00	0 - 660 mm [0 - 25.98 in] working range 60-660 mm [2.36 - 25.98 in] adjustable range	1	100 Hz switching	Hysteresis <1 % of range	Selectable [N.O.,N.C.]	5-wire, configurable as PNP, NPN, or Push-Pull	5-pin M12 quick- disconnect	Diagram 2	<a href="#">PDF</a>	—

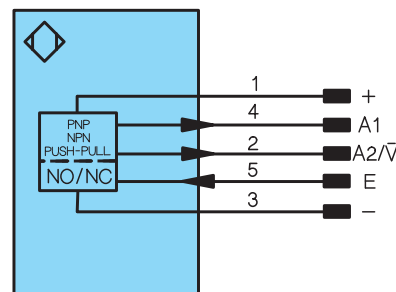
## Wiring Diagrams

**Diagram 1**



- + Supply Voltage "+"
- V Contamination/Error output (NO)
- O Analog output
- O- Ground for the analog output
- Supply Voltage "0 V"
- S Shielding
- La Emitted Light disengageable

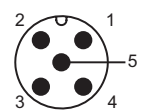
**Diagram 2**



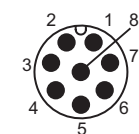
- + Supply Voltage "+"
- Supply Voltage "0 V"
- A1/A2 Switching output (NO)
- ∇ Contamination Warning/  
Error Output (NC)
- E Input (Teach Input, Emitted light can  
be switched off)

### Connectors

**5-Pin M12 connector**



**8-Pin M12 connector**

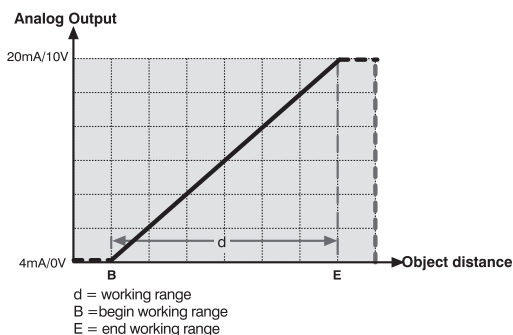


Note: Class 2 power source required

# OPT Short Range (CMOS) Series Photoelectric Sensors

Specifications	OPT2001	OPT2002	OPT2003	OPT2004	OPT2005	OPT2006	OPT2007
Type	Diffuse Reflex						
Sensing Distance	30-80 mm [1.18-3.15 in]	30-80 mm [1.18-3.15 in]	40-160 mm [1.57- 6.30 in]	40-160 mm [1.57- 6.30 in]	50-350 mm [1.97-13.78 in]	50-350 mm [1.97-13.78 in]	60-660 mm [2.36-25.98 in]
Light Spot Diameter (at maximum range)	1 x 2 mm [0.04 x 0.08 in]	0.7 x 1.4 mm [0.03 x 0.06 in]	1 x 2.5 mm [0.04 x 0.10 in]	0.9 x 1.8 mm [0.04 x 0.07 in]	1.5 x 4 mm [0.06 x 0.16 in]	1.4 x 3.1 mm [0.06 x 0.12 in]	2.0 x 5.5 mm [0.08 x 0.22 in]
Emission	Class 2 Red laser 660Nm	Class 1 Red laser 660Nm	Class 2 Red laser 660Nm	Class 1 Red laser 660Nm	Class 2 Red laser 660Nm	Class 1 Red laser 660Nm	Class 1 Red laser 655Nm
Sensitivity	Adjustable via Teach						
Output Type	0-10 VDC or 4-20mA: PNP error output						Complementary N.O./N.C. [Light-on, Dark-on] PNP or NPN
Current Output Max Load	500Ω						NA
Voltage Output Min Load	10 KΩ						NA
Operating Voltage	18-30 VDC						10-30 VDC
No Load Supply Current	< 80mA @ 24VDC						<50mA @ 2VDC
Operating (Load) Current	max 200mA						
Off-state (Leakage) Current	negligible						
Voltage Drop	< 2.5V						<1.5V
Measurement Rate/ Resolution	1500/s [660μs] @ 12μm 600/s [1660μs] @ 8μm	1000/s [1000μs] @ 12μm 500/s [2000μs] @ 8μm	1500/s [660μs] @ 30μm 600/s [1660μs] @ 20μm	1000/s [1000μs] @ 30μm 500/s [2000μs] @ 20μm	800/s [1250μs] @ 80μm 400/s [2500μs] @ 50μm	500/s [2000μs] @ 80μm 250/s [4000μs] @ 50μm	NA
Switching Frequency	1.5 kHz	1.0 kHz	1.5 kHz	1.0 kHz	800Hz	500Hz	100Hz
Linearity	0.1%				0.15%		NA
Time Delay Before Availability (tv)	NA						
Short-Circuit Protection	Yes						
Operating Temperature	-25 to 50°C [-13 to 122°F]						-25 to 60°C [-13 to 140°F]
Protection Degree (DIN 40050)	IEC IP67						IEC IP68
LED Indicators - Switching Status	Yellow						
LED Indicators - Power	Green						
Housing Material	Polycarbonate						
Lens Material	Polymethyl methacrylate (PMMA)						
Shock/Vibration	See terminology section.						
Tightening Torque	0.5 N·m (mounting screws)						
Weight (lbs) (cable/connector)	0.2						
Connectors	M12 quick-disconnect						
Agency Approvals	CE, cULUS, E189727, RoHs						

## Characteristic Curves



### IMPORTANT NOTE

The Laser Classification Systems for the standards IEC (EN) 60825-1 defines the following safety classes:

#### Class 1

This class is eye-safe under all operating conditions.

#### Class 2

These are visible lasers. This class is safe for accidental viewing under all operating conditions. However, it may not be safe for a person who deliberately stares into the laser beam for longer than 0.25 seconds, by overcoming their natural aversion response to the very bright light.

# Accessories for OPT Series 50x50mm Photoelectric Sensors

## Right-angle Brackets

Mounting bracket, right-angle, nickel-plated steel or 304 stainless steel.  
For use with OPT series 50x50mm photoelectric sensors.

Accessories for OPT Series 50x50mm Photoelectric Sensors				
Part Number	Price	Description	Drawing Link	Weight [lb]
<a href="#">OPT2031</a>	\$7.00	Wenglor mounting bracket, right-angle, nickel-plated brass. For use with OPT series 50x50mm photoelectric sensors.	<a href="#">PDF</a>	0.24
<a href="#">OPT2038</a>	\$11.00	Wenglor mounting bracket, right-angle, vertical and horizontal adjustment, 304 stainless steel. For use with OPT series 50x50mm photoelectric sensors.	<a href="#">PDF</a>	0.19



[OPT2031](#)



[OPT2038](#)

# Accessories for OPT Series 50x50mm Photoelectric Sensors

## Right-angle Swivel Mounting Systems

Mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment, 12mm rod mount. For use with OPT series 50x50mm photoelectric sensors. Available in all stainless steel or with an aluminum head with a stainless steel mounting plate.

Accessories for OPT Series 50x50mm Photoelectric Sensors						
Part Number	Price	Description	Mounting Head	Mounting Plate	Drawing Link	Weight [lb]
<a href="#"><u>OPT2122</u></a>	\$11.50	Wenglor mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment, aluminum, 12mm rod mount. For use with OPT series 50x50mm photoelectric sensors.	Aluminum	304 Stainless Steel	<a href="#"><u>PDF</u></a>	0.19
<a href="#"><u>OPT2123</u></a>	\$21.00	Wenglor mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment, 304 stainless steel, 12mm rod mount. For use with OPT series 50x50mm photoelectric sensors.	304 Stainless Steel	304 Stainless Steel	<a href="#"><u>PDF</u></a>	0.31

**NOTE:**

304 Stainless steel mounting rods sold separately: [OPT2109](#) (200mm length), [OPT2110](#) (300mm length), and [OPT2111](#) [500mm length].



[OPT2122,](#)  
[OPT2123](#)